

Name Key

Date _____

202—Review

Justify the following statements with postulates, properties, definitions, or theorems.

1. Reflex $m\angle B = m\angle B$
2. Symm If $RS = TW$, then $TW = RS$.
3. Subst If $m\angle 1 + m\angle 2 = 100$ and $m\angle 2 = 75$, then $m\angle 1 + 75 = 100$.
4. Subtr If $m\angle 1 + 75 = 100$, then $m\angle 1 = 25$.
5. Segm + If S is between R and T , then $RT = RS + ST$.
6. Def of midpt If X is the midpoint of UV , then $UX = XV$.
7. Transitive If $MN = NO$ and $NO = OP$, then $MN = OP$.
8. Subst If $m\angle 1 + m\angle 2 + m\angle 3 = 180$ and $m\angle 3 = 70$, then $m\angle 1 + m\angle 2 + 70 = 180$.
9. Trans If $\angle 4 \cong \angle 8$ and $\angle 8 \cong \angle 10$, then $\angle 4 \cong \angle 10$.
10. Reflexive $AB \cong AB$
11. Subst If the $m\angle 5 = m\angle 6$ and $m\angle 5 + m\angle 6 = 180$, then $m\angle 5 + m\angle 5 = 180$.
12. Subst If $m\angle 5 + m\angle 5 = 180$, then $2m\angle 5 = 180$.
13. Div If $2m\angle 5 = 180$, then $m\angle 5 = 90$.
14. Def of midpt If K is the midpoint of JL , then $JK \cong KL$.
15. Transitive If $m\angle 1 = m\angle 3$ and $m\angle 3 = 48$, then $m\angle 1 = 48$.
16. Reflexive $\angle RST \cong \angle RST$
17. Distr If $3(x - 8) = 39$, then $3x - 24 = 39$.
18. Add If $m\angle A = m\angle B$ and $m\angle C = m\angle D$, then $m\angle A + m\angle C = m\angle B + m\angle D$.
19. Add If $3x - 24 = 39$, then $3x = 63$.
20. Div If $3x = 63$, then $x = 21$.
21. Angle + Post If P is in the interior of $\angle LMN$, then $m\angle LMP + m\angle PMN = m\angle LMN$.
22. Mult If $\frac{1}{2}x = 10$, then $x = 20$.
23. Distr If $6(x + 1) = 24$, then $6x + 6 = 24$.
24. Subtr If $EF = GH$ and $AB = CD$, then $AB - EF = CD - GH$.
25. Symmetric If $m\angle X = m\angle Y$, then $m\angle Y = m\angle X$.

Write a conclusion based on the given and the diagram and then justify it.

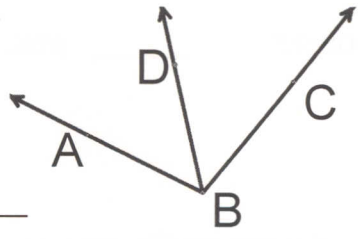
26. Given: M is the midpoint of NO .

Conclusion: $NM = MO$

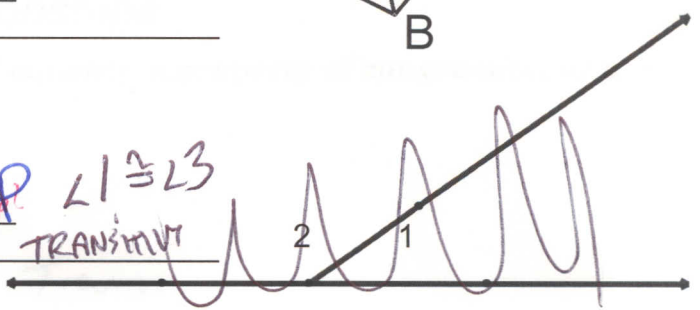
Reason: Def of Midpt



27. Given: \overrightarrow{BD} bisects $\angle ABC$
 Conclusion: $\angle ABD \cong \angle DBC$
 Reason: Def. 2 Bis.



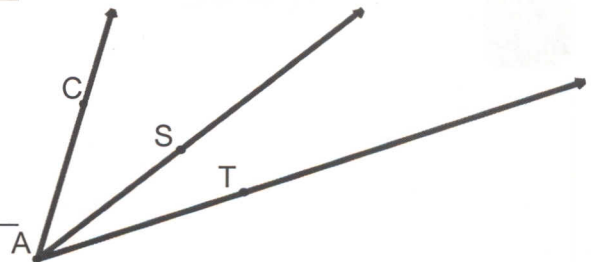
28. Given: Diagram.
 Conclusion: $\angle 1 \cong \angle 3$
 Reason: Transitive



29. Given: Diagram
 Conclusion: $RS = RT + TS$
 Reason: Segment Addition

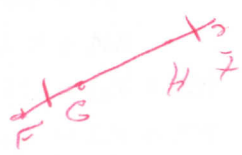


30. Given: Diagram
 Conclusion: $m\angle CAT = m\angle CAS + m\angle SAT$
 Reason: Angle Addition

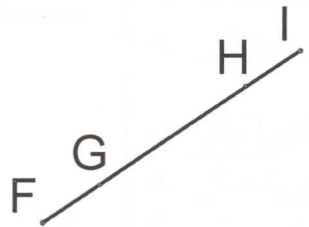


Write out the following proofs on loose-leaf. Remember to redraw the diagram and create the two-columns.

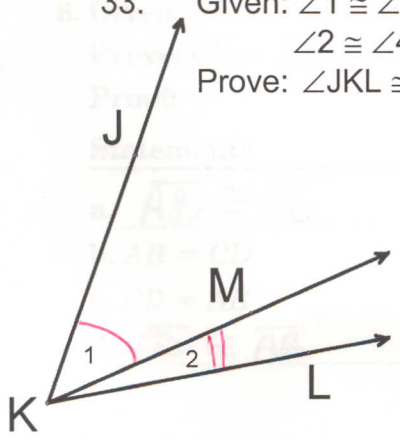
31. Given: $FG = HI$
 Prove: $FH = GI$



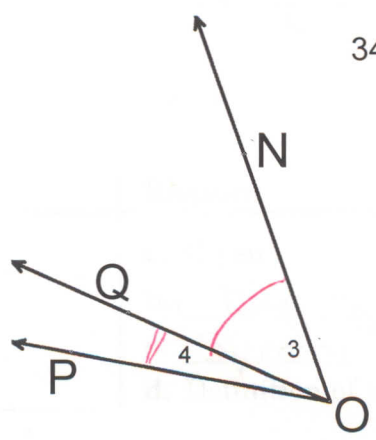
32. Given: $FH = GI$
 Prove: $FG = HI$



33. Given: $\angle 1 \cong \angle 3$
 $\angle 2 \cong \angle 4$
 Prove: $\angle JKL \cong \angle NOP$



34. Given: $m\angle JKL = m\angle NOP$
 $m\angle 1 = m\angle 3$
 Prove: $m\angle 2 = m\angle 4$



Your picture is different from mine

ANSWERS ON LL

2-7 Skills Practice**Proving Segment Relationships**

Justify each statement with a property of equality, a property of congruence, or a postulate.

1. $QA = QA$ *Refl.*

2. If $\overline{AB} \cong \overline{BC}$ and $\overline{BC} \cong \overline{CE}$, then $\overline{AB} \cong \overline{CE}$. *Trans*

3. If Q is between P and R , then $PR = PQ + QR$. *Segm +*

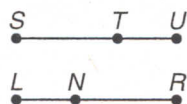
4. If $AB + BC = EF + FG$ and $AB + BC = AC$, then $EF + FG = AC$. *Subst*

Complete each proof.

5. Given: $\overline{SU} \cong \overline{LR}$
 $\overline{TU} \cong \overline{LN}$

Prove: $\overline{ST} \cong \overline{NR}$

Proof:



Statements

Reasons

a. $\overline{SU} \cong \overline{LR}, \overline{TU} \cong \overline{LN}$

a. *Given*

b. $SU = LR, TU = LN$

b. Definition of \cong segments

c. $SU = ST + TU$

c. *Segm +*

$LR = LN + NR$

d. $ST + TU = LN + NR$

d. *Subst.*

e. $ST + LN = LN + NR$

e. *Subst.*

f. $ST + LN - LN = LN + NR - LN$

f. *Subtr*

g. $ST = NR$

g. Substitution Property

h. $\overline{ST} \cong \overline{NR}$

h. *Def of \cong*

6. Given: $\overline{AB} \cong \overline{CD}$

Prove: $\overline{CD} \cong \overline{AB}$

Proof:

Statements

Reasons

a. $\overline{AB} \cong \overline{CD}$

a. Given

b. $AB = CD$

b. *Def of \cong*

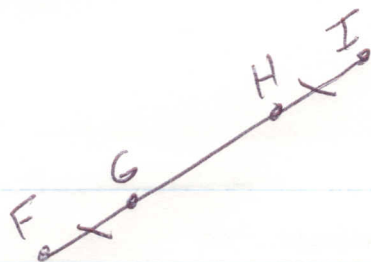
c. $CD = AB$

c. *Symm.*

d. $\overline{CD} \cong \overline{AB}$

d. Definition of \cong segments

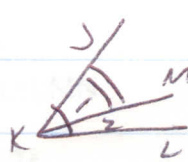
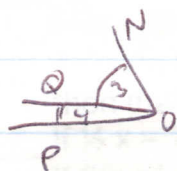
Proofs



31. ① $FG = HI$ ① Given
 ② $GH = GH$ ② Reflexive
 ③ $FG + GH = GH + HI$ ③ Addition
 ④ $FH = FG + GH$; $GI = GH + HI$ ④ Segment Add Post
 ⑤ $FH = GI$ ⑤ Subst.



32. ① $FH = GI$ ① Given
 ② $FH = FG + GH$ ② Segm. Add Post
 $GI = GH + HI$
 ③ $FG + GH = GH + HI$ ③ Subst.
 ④ $GH = GH$ ④ Reflexive
 ⑤ $FG = HI$ ⑤ Subtraction



- ① $\angle 1 \cong \angle 3$; $\angle 2 \cong \angle 4$ ① Given
 ② $m\angle 1 = m\angle 3$; $m\angle 2 = m\angle 4$ ② Def of \cong
 ③ $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$ ③ Add
 ④ $m\angle JKL = m\angle 1 + m\angle 2$ ④ Angle Add Post.
 $m\angle NOP = m\angle 3 + m\angle 4$
 ⑤ $m\angle JKL = m\angle NOP$ ⑤ Subst.
 ⑥ $\angle JKL \cong \angle NOP$ ⑥ Def of \cong

- ① $m\angle JKL = m\angle NOP$ ① Given
 $m\angle 1 = m\angle 3$
 ② $m\angle JKL = m\angle 1 + m\angle 2$ ② Angle Add Post
 $m\angle NOP = m\angle 3 + m\angle 4$
 ③ $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$ ③ Subst.
 ④ $m\angle 2 = m\angle 4$ ④ Subtr.